Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

in *Science*, July 25, 1919, states that there should be included in the book the names of all those in North America who have made contributions to the natural and exact sciences.

Archivio de Storia della Scienza (Roma, Nardecchia) is the title of a new quarterly periodical (Aldo Mieli, editor), the first number of which appeared last March. One of its articles, (pages 39–47) "Per una storia delle mathematiche nel secolo XIX" by G. LORIA, seems to have been inspired by F. Cajori's address, on "Plans for a history of mathematics in the nineteenth century," in 1918, as retiring president of the Mathematical Association of America.

The Rice Institute Pamphlets, volume 1, no. 2, May, 1915, contains English translations of two lectures delivered at the opening of the Rice Institute in 1912: (1) "Henri Poincaré" by VITO VOLTERRA, 133–162 (portrait of Poincaré) (2) "Molecular theories and mathematics" by EMILE BOREL, 163–193. Reference has been already made in this MONTHLY (*1917*, 250) to other lectures by Volterra and Borel published in *The Pamphlets*. All of these lectures are reprinted from volumes 2 and 3 of *The Book of the Opening of The Rice Institute*, Houston, Texas.

As announced in our September issue, H. G. ZEUTHEN, professor emeritus of the University of Copenhagen and of the Ecole Polytechnique of Copenhagen, died on his eightieth birthday. Among the books of this Nestor of Danish mathematicians are: *Die Lehre von den Kegelschnitten in Altertum* (German edition 1886), *Geschichte der Mathematik im Altertum und Mittelalter* (German edition 1896; briefer treatment, 1912), *Geschichte der Mathematik im XVI. and XVII. Jahrhundert* (German edition, 1903), and *Lehrbuch der abzählenden Methoden der Geometrie* (1912) a development of his *Encyklopädie* article (1905, French edition, 1915). As co-editor with Heiberg there had been issued two of the projected twelve volumes of *Mémoires scientifiques de Paul Tannery.*

Portraits and sketches of Zeuthen may be found in *Matematisk Tidsskrift*, A, February, 1919, in *Acta Mathematica, 1882–1912, Table gênerale* (Upsala. 1913), and in E. F. S. Lund's *Danske malede portraeter*, vol. 7 (Copenhagen, 1900).

ARTICLES IN CURRENT PERIODICALS.

AMERICAN JOURNAL OF MATHEMATICS, volume 41, no. 3, July, 1919: "Invariants of differential geometry by the use of vector forms" by C. D. Rice, 165–182; "On certain saltus equations" by H. Blumberg, 183–190; "Investigations on the plane quartic" by Teresa Cohen, 191–211; "On surfaces containing two pencils of cubic curves" by C. H. Sisam, 212–224; "Modular invariants of a quadratic form of a prime power modulus" by J. E. McAtee, 225–242.

ANNALS OF MATHEMATICS, 2d series, volume 20, no. 4, June, 1919: "Relations between abstract group properties and substitution groups" by G. A. Miller, 229–231; "The complete quadrilateral" by J. W. Clawson, 232–261; "Triply conjugate systems with equal point invariants" by L. P. Eisenhart, 262–273; "On a system of linear partial differential equations of the hyperbolic type" by T. H. Gronwall, 274–278; "Some properties of circles and related conics" by J. H. Weaver, 279–280; "Integrals in an infinite number of dimensions" by A. J. Daniell, 281–288; "On the differentiability of the solution of a differential equation with respect to a parameter" by J. F. Ritt, 289–291; "Note on the derivatives with respect to a parameter of the solutions of a system of differential equations" by T. H. Gronwall, 292–296; "On Quaternions and their generalization and the history of the eight-square theorem. Addenda" by L. E. Dickson, 297.

ATLANTIC MONTHLY, volume 124, no. 3, September, 1919: "The Scandal of Euclid, a Freudian analysis" by S. Strunsky, 332–337.

BULLETIN OF THE AMERICAN MATHEMATICAL SOCIETY, volume 25, no. 10, July, 1919: "The April meeting of the American Mathematical Society," by F. N. Cole, 433–448; "Report on the theory of the geometry of numbers" by H. F. Blichfeldt, 449–453; "Applications of the geometry of numbers to algebraic numbers" by L. E. Dickson, 453–455; "Products of skew-symmetric matrices," by A. A. Bennett, 455–458; "On the first factor of the class number of a cyclotomic field" by H. S. Vandiver, 458–460; "Corrections and note to the Cambridge Colloquium of September, 1916" by G. C. Evans, 461–463; "Circle and sphere geometry" by H. S. White, 464–467 [Review of Coolidge's *Treatise on the Circle and Sphere* (Oxford, 1916)]; Review by C. N. Moore of Karpinski, Benedict and Calhoun's *Unified Mathematics* (New York, 1918), and Pringsheim's *Vorlesungen über Zahlen- und Funktionenlehre*, Band 1 (Leipzig, 1916), 467–470; Review by L. W. Dowling of Fazzari's *I numeri reali e l'equazione esponenziale* $a^x = b$ *per le scuole medie superiori* (Palermo, 1918), 470–471; Review by F. M. Morgan of Carey's *Infinitesimal Calculus* (London, 1917), 472–473; Review by E. W. Brown of *Annuaire du Bureau des longitudes pour l'an 1919* (Paris, 1918), 473; "Notes," 474–480; "New Publications," 481–483; "Twenty-eighth annual list of papers," 484–491; "Index," 492–499.

EDUCATIONAL REVIEW, volume 58, no. 3, October, 1919: "Reopening of the Ecole Normale Supérieure" by A. Cohn, 181–200 [The opening exercises occurred March 23, 1919].

HARVARD GRADUATES MAGAZINE, volume 27, June, 1919: "Edward Charles Pickering" by J. H. Metcalf, 516–520 and Portrait; "More Reminiscences of '66" by George Batchelor [Pages 531–532—Benjamin Peirce: "In a tablet in the Exposition in Paris at the foot of a list of twenty of the greatest mathematicians of the last two thousand years appeared the name of Benjamin Peirce, our senior professor of mathematics. In '66 he was giving instruction which nobody understood, to a select audience of students who were trying to become mathematicians. He would begin by asking questions and attending to the answers, and then as some new truth flashed upon his mind, he would forget his class and cover the blackboard with algebraic symbols.

"At this time, Thomas Hill was president of the college, a great mathematician with no practical ability as an administrator. Before coming to Cambridge, he was minister of the Unitarian Church in Waltham. It is recorded by Robert S. Rantoul that when Peirce caught sight of some new truth which he could not reduce to writing, he would hasten to Waltham and describe to Hill what was disturbing his mind. He was the only man in America who could understand Peirce, and having 'no such original inspirations to trouble him, could better express in words, the new proposition when at last he understood it,' 'and towards morning send him home to Cambridge with his problem stated on paper in his pocket, and his mind at rest.'

"In a parlor in Boston, I heard Peirce in his old age deliver his last address. With great positiveness, he affirmed his belief in immortalility. He said, 'All my life I have studied the stars at long range. I expect to study them at short range. I may ride on the tail of a comet.' He said also, 'I have conceived the idea of an algebra of universal thought, but I am no longer able to work it out, and must leave it to those who come after me.' Probably no living man knows what he meant by that proposition.

"Of students that he instructed for many years in college, he said, 'We have seen many young men of brilliant parts, of whom we expected great things as scientific investigators; but they never fulfilled the promise of their youth. After long deliberation, I have come to the conclusion that the reason they failed was because they had bad hearts. The student of science must be a truth-seeker, and a truth teller, and the man whose heart is bad cannot be either.' "

JAHRESBERICHT DER DEUTSCHEN MATHEMATIKER VEREINIGUNG, volume 27, nos. 9–12, September–December, 1918: Determinanten und symmetrische Funktionen" by C. Kosta, 161–165; "Ausgezeichnete Elemente projektiver Gebilde, die ineinander liegen, und Folgerungen für die Homologien" by R. Sturm, 166–175; "Herstellung von Polaren" by R. Sturm, 175–178; "Die Mehrdeutigkeit von Integralen" by M. Pasch, 178–179; "Ueber die Bedingung der Integrierbarkeit" by M. Pasch, 179–181; "Ueber die Anordnung von vier Punkten einer Geraden" by L. v. Schrutka, 182–184; "Ueber die Vertauschbarkeit der Differentiationsfolge" by H. Hahn, 184–188; "Inwieweit kann Vandermonde als Vorgänger von Gauss bezüglich der algebraischen Auflösung der Kreisteilungsgleichung $x^n = 1$ angesehen werden?" by A. Loewy, 189–195; "Gaston Darboux" by A. Voss, 196–217; "Festrede zum 20 Stiftungstage der Göttinger Vereinigung zur Förderung der angewandten Physik und Mathematik" by F. Klein, 217–228 (full page portrait of Klein); "Die Forderung der Entscheidbarkeit," 228–232; "Ueber die Erweiterung des Grenzbegriffs" by M. Pasch, 232–234; "Ueber Kurven gleichmässigster Krümmung" by W. Blaschke, 234–236; "Bemerkung zu: Ueber Kurven gleichmässigster Krümmung" by R. v. Mises, 236; "Zu Felix Kleins goldenem Doktorjubiläum am 12. Dezember, 1918", *63–64*; Review by Bieberbach of Gauss's *Werke*, Band 10_1 (Leipzig, 1917), *66–68*; Review by F. Bernstein of Ziehen's *Das Verhältnis der Logik zur Mengenlehre* (Berlin, 1917), *66–68*.

JOURNAL OF THE INDIAN MATHEMATICAL SOCIETY, volume 11, no. 2, April, 1919: The Indian Mathematical Society and its Founder, Mr. V. Ramaswami Aiyar (Portrait frontispiece), 41–45 ["Our Society has just completed the twelfth year of its existence"]; "Conics with vanishing Θ, Θ'" by R. Vythynathaswamy, 46–49; "Bernoulli's polynomials and Fourier's series" by G. R. Ranganathan, 50–56; "Legitimacy of ordinary complex numbers" by G. A. Miller, 57–59; "Astronomical notes," 59–61; Problems and solutions, 62–80.

MATHEMATICAL GAZETTE, volume 9, no. 140, May, 1919: "Bordered antilogarithms, Trigonometric logarithms to every two minutes. Natural functions on three pages. Tables of exact squares" by G. H. Bryan with the assistance of C. Williams, T. G. Greak, Violet James, and others, 333–352 [Quotation from "Explanation of the tables": "Although books of mathematical tables have appeared by the dozen in recent years, most of them show little or no evidence of originality in the matter of arrangement. One of the most common characteristics of such tables is that much space is taken up with unnecessary repetition, as when both logarithms and antilogarithms, squares and square roots, or sines and cosines of all circles *sic* from 0° to 90° are separately tabulated, while the information supplied in other directions is defective, as when logarithms of reciprocals are omitted and tables of squares fail to give the correct values of the squares of integers.

"The Bordered Antilogarithm Table was published in the *Mathematical Gazette* for December 1915, and several correspondents expressed a wish that other tables should also be drawn up embodying improvements in arrangement proposed by me. This has now been done, and I have to thank those associated with my name on the titles for the whole work of making the necessary tabulations. It is interesting to note that the method of tabulation introduced in the Bordered Antilogarithm Table has already been adopted in a set of tables published for use on board the training ship *Conway*."]; Review, by G. Greenhill, of A. Gray's *Gyrostatics and Rotational Motion* (London, 1918), 353–356; "Books received, contents of Journals, etc.," 357–360.

MATHEMATICS TEACHER, volume 11, no. 4, June, 1919: "Tests of mathematical ability—their scope and significance" by Agnes L. Rogers, 145–164 ["bibliography," pp. 163–164]; "Some suggestions for courses in mathematics for non-college preparatory students," 165–171 [report presented at the spring meeting of the Association of Teachers of Mathematics in New England, May 3, 1919—Chairman of Committee: C. E. Paddock]; "A statistical study in correlation of efficiency in secondary mathematics and efficiency in other high school branches" by Nelle L. Ingels, 172–176; "Some angles of the right triangle" by A. L. Booth, 177–181 ("note" by E. R. Smith); "A psychological basis for a system of education with applications to mathematics" by W. P. Webber, 182–195; "Philosophy and non-euclidean geometry" by F. A. Foraker, 196–198; "Mathematical tests:—their relation to the mathematics teacher" by J. H. Minnick, 199–205; "Book Reviews," "Notes and News," 206–209.

NATURE, volume 103, June 12, 1919: "The age of the stars" by H. Shapley, 284—June 19: "Question relating to prime numbers" by A. Mallock, 305 [Quotations: "It is well known that no algebraical formula can represent prime numbers only, and that primes can only be found by trials (which may be facilitated by algebraical processes). If the mth prime number, counting from unity be denoted by n, and if n is plotted in terms of m, it will be found that n is approximately represented by a formula of the type Am^p ($A = 3\cdot 15$, $p = 1.133$, are close to the values of the constants). . . . Are there any investigations which give a reason for the tendency of n to approach a definite function of m, or as to the ultimate value of dn/dm when m increases without limit?"]—July 10: "Question relating to prime numbers" by G. N. Watson, 364–365 [Quotation: "An approximate expression for n is $m \log_e m$."]—July 17: "American astronomy", 394 [reprinted in *Science*, August 22.]

PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES, volumes 5, no. 6, June, 1919:

"On the most general class L of Fréchet, in which the Heine-Borel-Lebesgue theorem holds true" by R. L. Moore, 206–210; "On a certain class of rational ruled surfaces" by A. Emch, 222–224—No. 7, July: "On the twist in comformal mapping" by T. H. Gronwall, 248–250 ["Note II on conformal mapping under aid of Grant no. 207 from the Bache Fund"]; "Groups involving only two operators which are squares" by G. A. Miller, 272–274; "Real hypersurfaces contained in Abelian varieties" by S. Lefschetz, 296–298.

PROCEEDINGS OF THE ROYAL SOCIETY, London, series A, volume 95, June, 1919: "Bertram Hopkinson (with portrait)" by J. A. E., xxvi–xxxvi. [Born 1874; killed in a flying accident August, 1918. When only 29 years of age he was appointed to the chair of mechanism and applied mechanics in his alma mater, the University of Cambridge. "Many will mourn him as a trusted friend, but only those who knew something of what he did in the war can have a right idea of the magnitude of the nation's loss."]

QUARTERLY JOURNAL OF PURE AND APPLIED MATHEMATICS, volume 48, no. 3, June, 1919: Calculation of eighteen more, fifty in all, Eulerian numbers from central differences of zero" by S. A. Joffe, 193–271; "A new solution of Waring's problem" by G. H. Hardy and J. E. Littlewood, 272–288.

SCHOOL AND SOCIETY, volume 10, July 19, 1919: "Educational research and statistics; practical uses of an algebra standard scale" by F. R. Cawl, 88–90. [Use of Hotz's *First Year Algebra Scales*, Teachers College, Columbia University, Contribution No. 90, 1918.]

SCHOOL REVIEW, volume 27, no. 6, June, 1919: "Concrete geometry in thc Junior High School" by W. H. Fletcher, 441–457.

SCIENCE, new series, volume 49, June 20, 1919: "The airplane in surveying and mapping" by E. L. Jones, 572–582—June 27: "Revista matemática Hispano-Americana" by G. A. Miller, 608–609—Volume 50, July 4, "'Working up' in a swing" by A. T. Jones, 20–21 [First paragraph: "A child sitting or standing in a swing can 'work up' until he is swinging through a considerable distance. How is it possible for him, without touching his feet to the ground, to increase the extent of his swinging? As I do not recall ever seeing any discussion of this matter, the following note may not be out of place."]—July 11: "The discovery of calculus', by A. S. Hathaway ,41–43 [First sentence: "The writer desires to call attention to certain disclosures here pointed out for the first time, whose conclusions are decisive in the matter of the celebrated controversy between Newton and Leibniz, regarding the discovery of calculus."]—July 18: "The history of science and the American Association for the Advancement of Science" by F. E. Brasch, 66–68; "Working up in a swing" by V. Karapetoff and P. E. Klopsteg, 70–71 [References for the treatment of Mr. Jones's problem are given to: (1) E. J. Routh's *Dynamics of a System of Rigid Bodies*, vol. 1, art. 287 (examples of living beings, no. 6); (2) *Zeitschrift für physikalischen und chemischen Unterricht*, vol. 16, 1913, p. 16, and vol. 17, 1914, p. 27.]

SCIENTIA, volume 25, no. 5, May, 1919: "Le matematiche in Ispagna, ieri ed oggi. Parte prima: Dal secolo XVI alla metà del XIX" by G. Loria, 353–359 [French translation, supplément, 79–85]; Review by M. Davidson of Whitehead's *The Organisation of Thought* (London, 1917) and *Science and the Nation*, essays edited by Seward (Cambridge, 1917), 410–412.—No. 6, June: "Le matematiche in Ispagna, ieri ed oggi. Parte II^a: I matematici moderni" by G. Loria, 441–449 [French translation, supplément, 99–108]; Review by P. E. B. Jourdain of Byerly's *An Introduction to the Use of generalized Coordinates in Mechanics and Physics* (Boston, 1916), 499–500; Review by G. Scorza of Forsyth's *Lectures introductory to the Theory of Functions of two Complex Variables* (Cambridge, 1914) and Goursat's *A Course of Mathematical Analysis*, vol. 2, parts 1–2, translated by Hedrick and Dunkel (Boston, 1916–1917), 500–502; Review by A. Mieli of *L'ottica di Euclide* edited by Orio (Milano, 1918), 502–503. [In his second article on Spanish mathematics, in discussing advances of the science in the last third of the nineteenth century, Loria sketches the career of Josè Echegaray, known throughout the world, not as a mathematician, but as the popular author of dramatic productions for which a Nobel prize was awarded. He was born between 1832 and 1836 and died in 1916. He is the author of half a dozen mathematical works.] —Volume 26, no. 1, July: "Le matematiche in Portogallo; ciò che furono, ciò che sono" by G. Loria, 1–9 (French translation, supplément, 1–9); Reviews by G. Scorza of Blichfeldt's *Finite Collineation Groups* (Chicago, 1917), H. T. Hudson's *Ruler and Compasses* (London, 1916) and H. Hancock's *Elliptic Integrals* (New York, 1917), 47–49.—No. 2, August: "Origines et developpement de l'algèbre" by L. C. Karpinski, 84–101; "Il problema dei tre corpi" by R. Marcolongo, 102–112, supplément, 17–27; Review by G. Scorza of Bôcher's *An introduction to the study of integral equations* (2nd edition, Cambridge, 1914), Dickson's *Linear algebras* (Cambridge, 1914), and, Hardy and Riesz's *The general theory of Dirichlet's series* (Cambridge, 1915), 147–150; Review by A. C. D. Crommelin of Plummer's *An introductory treatise on dynamical astronomy* (Cambridge, 1918), 150–152.

The Tôhoku Mathematical Journal, volume 15, nos. 3–4, April, 1919: "Note on Laguerre transformations," 227–231; "On Steiner's problem of closure" by K. Yanagihara, 232–235; "On curves with monotonous curvature" by T. Hayashi, 236–239; "Note on determinants whose matrix is that of an orthogonant increased or diminished by matrix unity," by T. Muir, 240–245; "On the sign and magnitude of the coefficients in the Fourier series, the sine series and the cosine series" by K. Ogura, 246–260; "Tractories in the irreversible field of force on a surface" by K. Ogura, 261–277; "A theorem on power series" by Y. Okada, 278–279; "A theorem on limits" by Y. Okada, 280–283; "An extension of a theorem of Scheefer's" by Y. Uchida, 284; "Ueber eine Ungleichung für bestimmte Integrale" by M. Jujiwara, 285–288; "Casey's Theorem in Japanese Mathematics" by T. Hayashi, 289–296 (in Japanese); "On Mr. Ône's theorem" by K. Ôishi, 297–299; "Some theorems on limits" by S. Narumi, 300–313; "Einige Sätze den Grenz wert betreffend" by T. Kubota, 314–322; "Ueber summierbare Reihen und Integrale" by M. Fujiwara, 323–329; "On the indeterminate form ∞/∞" by T. Hayashi, 330–336 (in Japanese).

Transactions of the Royal Society of Canada, volume 12, series III, Mathematical, physical and chemical sciences, December, 1918, and March, 1919: "Concerning the integrals of Leleuvre" by C. T. Sullivan, 171–184; "Rational plane unharmonic cubics" by A. M. Harding, 185–194.

AMERICAN DOCTORAL DISSERTATIONS.

R. W. Brink, "Some integral tests for the convergence and divergence of infinite series." *Published under the title:* "A new integral test for the convergence and divergence of infinite series," *Transactions of the American Mathematical Society*, 1918, volume 19, pp. 186–204. (Harvard, 1916.)

L. R. Ford, "On rational approximations to an irrational complex number," *Transactions of the American Mathematical Society*, 1918, volume 19, pp. 1–42. (Harvard, 1917.)

M. T. Hu, "Linear integro-differential equations with a boundary condition," *Transactions of the Ameriean Mathematical Society*, 1918, volume 19, pp. 363–407. (Harvard, 1917.)

W. E. Milne, "On the degree of convergence of Birkhoff's series." *Portions published as:* "On certain asymptotic expressions in the theory of linear differential equations," *Proceedings of the National Academy*, 1916, volume 2, pp. 543–545; "Note on asymptotic expressions in the theory of linear differential equations," *Bulletin of the American Mathematical Society*, 1917, volume 23, pp. 166–169. (Harvard, 1915.)

C. E. Wilder, "Problems in the theory of ordinary linear differential equations with auxiliary conditions at more than two points." *Portions published as:* "Expansion problems of ordinary linear differential equations with auxiliary conditions at more than two points," *Transactions of the American Mathematical Society*, 1917, volume 18, pp. 415–442. (Harvard, 1915.)

UNDERGRADUATE MATHEMATICS CLUBS.

Edited by U. G. Mitchell, University of Kansas, Lawrence.

CLUB ACTIVITIES.

The Mathematics Club of Albion College, Albion, Mich. [*1918*, 354–357.]

No meetings of this club were held during the period of the S. A. T. C. The first meeting of the year 1918–19 was held on January 21, 1919, and meetings were held regularly every other week thereafter, or as nearly according to this program as possible. Ten men and twelve women constituted the membership of the club for the year. Lieutenants W. Clarke Dean '21, and Murrey Fox '19,